Module Descriptor

Title	Molecules of Life		
Session	2025/26	**Status**	Published
Code	CHEM07013	**SCQF Level**	7
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Dr Mohammed Yaseen		

Summary of Module

This module is an introduction to the main areas of biological and molecular science related to the life sciences. It would be useful to anyone interested in the further study of forensic, chemical or biological sciences.

This module will work to develop a number of the key 'I am UWS' Graduate Attributes. Those who complete this module will have developed professional competencies in critical thinking require of a modern graduate. It will also develop problem solving and inquiry skills related to high-level academic study in science.

- Serving as an introduction to cell and molecular biology, the module will focus on the central role of the cell in the maintenance and continuity of life. An introduction to the nature and scope of biology, and to the scientific method, will be presented.

- Cell structure and function will be investigated by considering the components of cells, including the role of macromolecules (carbohydrates, lipids, proteins and nucleic acids) in the cell. Chemical concepts that are important in the study of the cell will be covered including the periodic table, chemical bonding, properties of water and pH.

- Energy acquisition and use will be considered in photosynthesis and respiration, and the role of enzymes and metabolic pathways will be illustrated.

- The role of information in the cell will be illustrated by considering the processes of DNA replication, transcription and translation at an introductory level. Cell division processes will be investigated by describing the importance of the cell cycle, and the processes of mitosis and meiosis. An introduction to the range of cells, both prokaryotic and eukaryotic, will serve to introduce students to the concept of diversity at the cellular level, and the role of cells as components of multicellular organisms will be outlined.

- Introduction to basic human anatomy and physiology.

- An introduction to the Laboratory techniques in life science

- The role of cell and molecular biology in scientific research, and in medical, forensic and biotechnological applications will also be illustrated.

Module Delivery Method	On-Campus[1] ☒	Hybrid[2] ☐	Online[3] ☐	Work -Based Learning[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Outline the features of biological systems at the biochemical and cellular levels .
L2	Demonstrate competence in selected basic life science laboratory skills
L3	Describe a selection of the important features of human anatomy and physiology
L4	Describe the properties and structure of selected bio-molecules
L5	

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 7** Demonstrate knowledge of the cell and bio-molecules and their importance in understanding the processes of life and biochemistry
Practice: Applied Knowledge and Understanding	**SCQF 7** Develop an appreciation of the role of the biosciences in society, and the importance of cell and molecular biology in the context of basic science, and in medical, forensic and biotechnological applications.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Generic Cognitive skills	**SCQF 7** Use a range of approaches to develop analytical skills in theoretical and practical aspects of cell and molecular biology.
Communication, ICT and Numeracy Skills	**SCQF 7** Develop skills in gathering and analysing information in the bioscences, from a range of sources, using IT skills as appropriate.
Autonomy, Accountability and Working with Others	**SCQF 7** Work with others in the investigation of a range of topics in cellular and molecular aspects of the biosciences.

Prerequisites	**Module Code**	**Module Title**
	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Laboratory / Practical Demonstration / Workshop	12
Tutorial / Synchronous Support Activity	12
Independent Study	152
Please select	
Please select	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Biology (2nd Edition), OpenStax (Publ)

Raven, Johnson, Mason, Losos and Stinger. (2018) Biology (11th edition). McGraw-Hill education (ISBN 978-1-259-25476-5).

Chemistry (2nd Edition), OpenStax (Publ)

Proteins: Structure and Function 2005 Wiley; 1st edition, ISBN-10 ? : ? 0471498947

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code.

Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. Specialist assistive equipment, support provision and adjustment to assessment practice in accordance with the University's policies and regulations.

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No**

	If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.
School Assessment Board	Physical Sciences
Moderator	Dr Ciaran Ewins
External Examiner	TBC
Accreditation Details	This module is accredited by the Royal Society of Chemistry (RSC) as part of the BSc (Hons) Chemistry Programme. This is a core module in the BSc (Hons) Forensic Science programme which is accredited by the Chartered Society of Forensic Sciences. This is a core module in the BSc (Hons) Criminal Justice and Forensic Science programme which is Recognised by the Chartered Society of Forensic Sciences.
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.10

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Coursework Continuous assessment: Laboratory and group work 40%
Assessment 2
Coursework Class tests (online) 60%
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Laboratory	☒	☒	☒	☐	☐	40	20

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
class tests	☒	☐	☒	☒	☐	60	4

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	24 hours

Change Control

What	When	Who